The listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (currently amended) A radio communication system comprising:

a transmitter for transmitting a plurality of continuous noise transmitted waveforms separated by a time interval D, wherein the transmitted waveforms are encoded by a relative polarity of two instances of the plurality of continuous noise transmitted data; and

a receiver for receiving the plurality of continuous noise transmitted waveforms transmitted by the transmitter, the receiver comprising:

a bank of correlators, each correlator in the bank of correlators being tuned to a different delay, each correlator of the bank of correlators comprising:

a multiplier for multiplying delayed and undelayed versions of the received signal; and

an integrator connected to the multiplier for integrating an signal output by the multiplier;

a code word correlator connected to the integrator for correlating a code word corresponding to $N_C$ chips, each of the $N_C$ chips comprising a continuous noise transmitted waveform separated by a fixed time interval.

2. (previously presented) The radio communication system of Claim 1, wherein the code word correlator comprises a digital signal processor (DSP) executing a code word correlator algorithm correlating the code word corresponding to the $N_C$ chips.

3. (previously presented) The radio communication system of Claim 1, wherein the code word correlator 340 comprises a programmable logic device (PLD) executing a code word correlator algorithm correlating the code word corresponding to the $N_C$ chips.

4. (previously presented) The radio communication system of Claim 1, wherein the code word correlator comprises an application specific integrated circuit (ASIC) executing a code word correlator algorithm correlating the code word corresponding to the $N_C$ chips.

5. (currently amended) The radio communication system of Claim 1 wherein the receiver ~~further~~ comprises:

an antenna for receiving a received signal comprising the plurality of continuous noise transmitted waveforms transmitted by the transmitter;

a baseband demodulator connected to the antenna for converting the received signal into real and imaginary parts of a complex output, the baseband demodulator comprising:

a delay adapted to delay both the real and imaginary parts of the complex output;

a signal multiplier connected to the delay, the signal multiplier being adapted to perform a complex multiplication of a direct path of the received signal by a complex conjugate of a delayed path of the received signal, and wherein the integrator comprising two integrators, one for the real part and another for the imaginary part of the product signal output by the signal multiplier.

6. (previously presented) The radio communication system of Claim 1 wherein the plurality of continuous noise transmitted waveforms being transmitted sequentially with a plurality of code words.

7. (previously presented) The radio communication system of Claim 1 wherein the transmitter comprises:

a noise source for generating the plurality of continuous noise transmitted waveforms;

a delay connected to the noise source for delaying at least one of the plurality of continuous noise carriers by the time interval D;

an information modulator connected to the delay for modulating the code word into at least one of the plurality of continuous noise transmitted waveforms; and

a summer connected to the information modulator and the noise source for combining the two instances of the plurality of continuous noise transmitted waveforms wherein a first instance comprises an undelayed continuous noise transmitted waveform and the second instance comprises a delayed continuous noise transmitted waveform comprising the modulated code word.

8. (previously presented) The radio communication system of Claim 7 wherein the transmitter comprises a filter connected to the noise source for spectrally shaping the continuous noise transmitted waveform.

9. (previously presented) The radio communication system of Claim 7 wherein the noise source comprises a wideband noise source.

10. (previously presented) The radio communication system of Claim 7 wherein the noise source comprises a pseudo random noise source.

11. (previously presented) The radio communication system of Claim 10 wherein the delay is comprised in the pseudo random noise source and the continuous noise transmitted waveforms being delayed during generation by the pseudo random noise source.

12. (previously presented) The radio communication system of Claim 1 wherein the delay time interval D can comprise more than a single delay, where multiple delays have nominal values spread around a nominal value of the transmitter's delay, a delay actually used for demodulation being selected from among existing delays as that one whose output has the highest energy in response to a transmission at the nominal delay.

13. (currently amended) An ultra wideband communication system comprising:

a transmitter 100 for generating a plurality of continuous noise transmitted waveforms separated by a time interval, D, transmitted waveforms being encoded by a relative polarity of two instances of the plurality of continuous noise, the transmitter comprising;

a wideband noise source for generating the plurality of continuous noise transmitted waveforms;

a delay 160 connected to the noise source for delaying at least one of the plurality of continuous noise carriers by the time interval D;

an information modulator connected to the delay for modulating the code word into at least one of the plurality of continuous noise transmitted waveforms; and

a summer connected to the information modulator and the noise source for combining the two instances of the plurality of continuous noise transmitted waveforms wherein a first instance comprises an undelayed continuous noise transmitted waveform and the second instance comprises a delayed continuous noise transmitted waveform comprising the modulated code word;

a receiver for receiving the plurality of continuous noise transmitted waveforms transmitted by the transmitter, the receiver comprising:

a bank of correlators, each correlator in the bank of correlators being tuned to a different delay, each correlator of the bank of correlators comprising;

a multiplier for multiplying delayed and undelayed versions of the received signal; and

an integrator connected to the multiplier for integrating an signal output by the multiplier;

a code word correlator connected to the integrator for correlating a code word corresponding to $N_C$ chips, each of the $N_C$ chips comprising a continuous noise transmitted waveform separated by a fixed time interval.

14. (previously presented) The ultra wideband communication system of Claim 13 wherein the noise source comprises a wideband noise source.

15. (previously presented) The ultra wideband communication system of Claim 13 wherein the noise source comprises a pseudo random noise source.

16. (previously presented) The ultra wideband communication system of Claim 15 wherein the delay is comprised in the pseudo random noise source and the continuous noise transmitted waveforms being delayed during generation by the pseudo random noise source.

17. (original) A method of communicating a continuous noise transmitted waveform, the method comprising the steps of:

generating a plurality of continuous noise transmitted waveforms;

delaying at least one of the continuous noise transmitted waveforms by a time interval, D;

modulating a code word into a delayed instance of at least one of the continuous noise transmitted waveforms wherein the code word comprises $N_C$ chips, each of the $N_C$ chips comprising a continuous noise transmitted waveform separated by a fixed time interval;

transmitting a sum of two instances of the plurality of continuous noise transmitted waveforms wherein a first instance comprises an undelayed continuous noise transmitted waveform and the second instance comprises the delayed instance of the at least one of the continuous noise transmitted waveforms including the modulated code word;

receiving the sum of two instances of the plurality of continuous noise transmitted waveforms; and

correlating the code word corresponding to the $N_C$ chips from the received sum of two instances of the plurality of continuous noise transmitted waveforms.

18. (original) The method of Claim 17 further comprising the steps of:

correlating the received sum of two instances of the plurality of continuous noise transmitted waveforms to a delay having time interval, D;

multiplying delayed and undelayed versions of the received sum of two instances of the plurality of continuous noise transmitted waveforms; and

integrating the multiplied delayed and undelayed versions of the received sum of two instances of the plurality of continuous noise transmitted waveforms.

19. (original) The method of Claim 17 further comprising the step of selecting the time interval D to correspond to a predetermined value.

20. (original) The method of Claim 17 further comprising the step of spectrally shaping the generated plurality of continuous noise transmitted waveforms.

21. (original) The method of Claim 17 wherein the generated plurality of continuous noise transmitted waveforms comprises wideband pseudo noise.

22. (original) The method of Claim 17 wherein the generated plurality of continuous noise transmitted waveforms comprises wideband noise.

23. (original) The method of Claim 17 wherein the step of correlating the code word is performed on a digital signal processor (DSP) executing a code word correlator algorithm, further comprising the step of performing analog-to-digital conversions of the received sum of two instances of the plurality of continuous noise transmitted waveforms and providing digital inputs to the digital signal processor.

24. (original) The method of Claim 17 wherein the step of correlating the code word is performed on a programmable logic device executing a code word correlator algorithm.

25. (original) The method of Claim 17 wherein the step of correlating the code word is performed on a application specific integrated circuit (ASIC) executing a code word correlator algorithm.

26. (original) The method of Claim 17 wherein the step of receiving further comprises the steps of:

baseband demodulating a received signal to convert the received sum of two instances of the plurality of continuous noise transmitted waveforms to real and imaginary parts of a complex output;

delaying both the real and imaginary parts of the complex output;

performing a complex multiplication of a direct path by a complex conjugate of a delayed path; and

integrating the real part and the imaginary part of the product signal output produced by the step of performing the complex multiplication.

27. (original) The method of Claim 17 wherein the time interval D can be more than a single delay, where multiple delays have nominal values spread around a nominal value of the transmitter's delay, a delay actually used for demodulation being selected from among existing delays as that one whose output has the highest energy in response to a transmission at the nominal delay.

28. (currently amended) A method of communicating a continuous noise transmitted waveform, the method comprising the steps of:

generating a plurality of continuous noise transmitted waveform using a wideband noise source;

delaying at least one of the continuous noise transmitted waveform by a time interval, D;

modulating a code word into a delayed instance of at least one of the continuous noise transmitted waveform wherein the code word comprises $N_C$ chips, each of the $N_C$ chips comprising a continuous noise transmitted waveform separated by a fixed time interval;

transmitting a sum of two instances of the plurality of continuous noise transmitted waveforms wherein a first instance comprises an undelayed continuous noise transmitted waveform and the second instance comprises the delayed instance of the at least one of the continuous noise transmitted waveforms including the modulated code word;

receiving the sum of two instances of the plurality of continuous noise transmitted waveforms;

correlating the received sum of two instances of the plurality of continuous noise transmitted waveforms to a delay having time interval, D;

multiplying delayed and undelayed versions of the received sum of two instances of the plurality of continuous noise transmitted waveforms;

<u>wherein the correlating step comprises:</u>

integrating the multiplied delayed and undelayed versions of the received sum of two instances of the plurality of continuous noise transmitted waveforms; and

correlating the code word corresponding to the $N_C$ chips from the received sum of two instances of the plurality of continuous noise transmitted waveforms.